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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,081	09/15/2006	Masaru Hidaka	295431US-40X PCT	7845
22850	7590	07/11/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER TISCHLER, FRANCES				
ART UNIT		PAPER NUMBER		
4171				
NOTIFICATION DATE		DELIVERY MODE		
07/11/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/593,081

**Applicant(s)**

HIDAKA ET AL.

**Examiner**

Frances Tischler

**Art Unit**

4171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/02)  
Paper No(s)/Mail Date 9/15/06, 12/15/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claims the content of the alkaline salt is not less than 2 molar equivalents relative to the theoretical number of the moles of an acid residue. It is unclear how applicant is comparing molar equivalents of one compound relative to number of moles of another compound.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Junya et al (JP 10-024274).

4. Regarding claims 1 and 5: Applicant claims a method for decomposing a plastic comprising:

- treating the thermosetting resin, which comprises:
- a polyester and its crosslinking moiety,

- with sub-critical water of a temperature lower than the thermal decomposition temperature of the thermosetting resin, and
- recovering a compound comprising an acid residue derived from the polyester and a residue derived from the crosslinking moiety.

5. Regarding claims 2 and 3: Applicant claims the method wherein the sub-critical water contains an alkaline salt, wherein the alkaline salt is a hydroxide of an alkaline metal.

6. Junya discloses (abstract, [0006], [0009], example 2, claims 1 – 3) a method for treating the industrial and domestic waste, specifically thermosetting plastics such as polyesters, to recover low to medium molecular weight compounds. These low to medium weight compounds read on applicant's residues. Junya's thermosetting plastics read on applicant's crosslinking moiety, since a thermosetting plastic is inherently crosslinked. Junya's thermosetting resin is hydrolyzed with sub-critical water mixed with a base, such as NaOH, corresponding to applicant's sub-critical water containing an alkaline salt which is a hydroxide of alkaline metal. Junya discloses an example of recycling an epoxy resin, by the method described above, wherein the temperature is adjusted to 400°C, reading on applicant's claim of keeping the temperature lower than the thermal decomposition of the thermosetting resin.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Junya et al (JP 10-024274).

10. Applicant claims the content of the alkaline salt is not less than 2 molar equivalents. The comparison is made with the number of moles of the acid residue from the reaction.

11. Junya discloses (abstract, [006], example claims 1 – 3), as described above, a method for treating industrial and domestic waste, specifically thermosetting plastics such as polyesters, to recover low to medium molecular weight compounds. The waste

thermosetting resin is hydrolyzed with sub-critical water mixed with a base, such as NaOH. Junya discloses sub-critical water with 2% base, and also the use of 500g of NaOH when 10Kg of raw reclaimed epoxy resin is used. However, Junya fails to teach the amount or concentration of the alkaline salt used compared to the amount of acid product obtained from the reaction.

12. Alkaline salt or base is used as a catalyst in polyester hydrolysis. Therefore, the amount that should be used depends on the amount of reactant present or on the amount of products that will result from the reaction. For example, two COOH for each  $\text{Ca}^{2+}$ , one COOH for each  $\text{Na}^+$ , etc. will ensure that a one-to-one correspondence between catalyst and polymer. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the amount of alkaline salt used to speed up the reaction based on the amount of reactant or product present so that at least a 2 molar equivalent of the base is used.

***Examiner Information***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frances Tischler whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

Art Unit: 1796

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/  
Primary Examiner, Art Unit 1796

Frances Tischler  
Examiner  
Art Unit 4171

/FT/